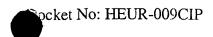
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What is claimed is:

1. A method for determining the offset between at least two origins of a coordinate system used for at least two different defect inspection spaces, the method comprising:

collecting multiple sets of data spanning said defect inspection spaces;

filtering said data sets to remove points that introduce noise into correlation calculations;

determining whether different said data sets show correlation;
selecting pairs of said data sets showing correlation greater than or
equal to a metric, if different said data sets show correlation; and
calculating coordinate offsets of said origins based on the said
selected pairs of said data sets.

2. An apparatus for determining the offset between at least two origins of a coordinate system used for at least two different defect inspection spaces, comprising:

means for collecting multiple sets of data spanning said defect inspection spaces;

means for filtering said data sets to remove points that introduce noise into correlation calculations;

means for determining whether different said data sets show correlation;

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means for selecting pairs of said data sets showing correlation
greater than or equal to a metric, if different said data sets show correlation; and
means for calculating coordinate offsets of said origins based on the
said selected pairs of said data sets.

3. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method of determining the offset between at least two origins of a coordinate system used for at least two different defect inspection spaces, the method comprising:

collecting multiple sets of data spanning said defect inspection spaces;

filtering said data sets to remove points that introduce noise into correlation calculations;

determining whether different said data sets show correlation;
selecting pairs of said data sets showing correlation greater than or
equal to a metric, if different said data sets show correlation; and
calculating coordinate offsets of said origins based on the said
selected pairs of said data sets.

4. A method for determining the offset between at least two origins of a coordinate system used for at least two different defect inspections of a wafer at, at least, a first layer and a second layer and with integrated circuits disposed on it, the method comprising:

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filtering defect data;

identifying each defect in said second layer lying near each defect in said first layer;

computing coordinate differences between defects in said first layer and said defects in said second layer;

finding dense zones where there are a relatively high density of offsets;

determining whether offsets in said dense zones are distributed randomly;

calculating descriptive statistics, including at least average offsets and

confidence limits, for said dense zones if said offsets are not distributed randomly;

and

reporting average offset and confidence limits.

5. The method of claim 4, wherein said finding of dense zones comprises:

dividing the range of each coordinate offset into a number of equal intervals; and

selecting the interval with the greatest count of offsets as the dense zone.

6. An apparatus for determining the offset between at least two origins of a coordinate system used for at least two different defect inspections of a wafer at, at least, a first layer and a second layer and with integrated circuits disposed on it, comprising:

means for filtering defect data;

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means for identifying each defect in said second layer lying near each defect in said first layer;

means for computing coordinate differences between defects in said first layer and said defects in said second layer;

means for finding dense zones where there are a relatively high density of offsets;

means for determining whether offsets in said dense zones are distributed randomly;

means for calculating descriptive statistics, including at least average offsets and confidence limits, for said dense zones if said offsets are not distributed randomly; and

means for reporting average offset and confidence limits.

7. The apparatus of claim 6, wherein said means for finding of dense zones comprises:

means for dividing the range of each coordinate offset into a number of equal intervals; and

means for selecting the interval with the greatest count of offsets as the dense zone.

8. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for determining the offset between at least two origins of a coordinate system used for at least two different defect inspections of a wafer at, at least, a



first layer and a second layer and with integrated circuits disposed on it, the method comprising:

filtering defect data;

identifying each defect in said second layer lying near each defect in said first layer;

computing coordinate differences between defects in said first layer and said defects in said second layer;

finding dense zones where there are a relatively high density of offsets;

determining whether offsets in said dense zones are distributed randomly;

calculating descriptive statistics, including at least average offsets and confidence limits, for said dense zones if said offsets are not distributed randomly; and

reporting average offset and confidence limits.

9. The program storage device of Claim 8, wherein said finding of dense zones further comprises:

dividing the range of each coordinate offset into a number of equal intervals; and

selecting the interval with the greatest count of offsets as the dense zone.

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10. A method for determining the offset between at least three origins of a coordinate system used for at least three different defect inspections of a wafer with integrated circuits disposed on it, the method comprising:

finding all possible pairwise links between layers; constructing a tree of links;

identifying from said tree all indirect paths along which layers can be linked;

calculating statistics of offsets between indirectly linked layers;

determining whether any pair of layers are linked by multiple paths;

listing each pair of layers linked by multiple paths, if there are any
pair of layers linked by multiple paths;

selecting a listed pair of layers that have not been previously selected;

determining whether offsets associated with said listed pair of layers are within confidence limits of each other;

selecting the best estimate of said offsets;

determining whether the system has selected all the of the listed pairs; and

selecting a listed pair of layers that have not been previously selected.

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The method of claim 10, wherein selecting said best estimate comprises averaging said offsets associated with said listed layer pairs.

- 12. The method of claim 10, wherein selecting said best estimate comprises calculating the median of said offsets associated with said listed layer pairs.
- 13. An apparatus for determining the offset between at least three origins of a coordinate system used for at least three different defect inspections of a wafer with integrated circuits disposed on it, comprising:

means for finding all possible pairwise links between layers;

means for constructing a tree of links;

means for identifying from said tree all indirect paths along which layers can be linked;

means for calculating statistics of offsets between indirectly linked layers;

means for determining whether any pair of layers are linked by multiple paths;

means for listing each pair of layers linked by multiple paths, if there are any pair of layers linked by multiple paths;

means for selecting a listed pair of layers that have not been

20 previously selected;

means for determining whether offsets associated with said listed pair of layers are within confidence limits of each other;

means for selecting the best estimate of said offsets;

means for determining whether the system has selected all the of the listed pairs; and

means for selecting a listed pair of layers that have not been previously selected.

- 14. The apparatus claim 13, wherein said means for selecting best estimate further comprises means for averaging said offsets associated with said listed layer pairs.
- 15. The apparatus of claim 13, wherein said means for selecting said best estimate comprises means for calculating the median of said offsets associated with said listed layer pairs.
- 16. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for determining the offset between at least three origins of a coordinate system used for at least three different defect inspections of a wafer with integrated circuits disposed on it, the method comprising:

finding all possible pairwise links between layers; constructing a tree of links;

identifying from said tree all indirect paths along which layers can

20 be linked;

calculating statistics of offsets between indirectly linked layers; determining whether any pair of layers are linked by multiple paths;

listing each pair of layers linked by multiple paths, if there are any pair of layers linked by multiple paths;

selecting a listed pair of layers that have not been previously selected;

determining whether offsets associated with said listed pair of layers are within confidence limits of each other;

selecting the best estimate of said offsets;

determining whether the system has selected all the of the listed pairs; and

selecting a listed pair of layers that have not been previously selected.

- 17. The program storage device of claim 16, wherein said selecting the best estimate comprises averaging said offsets associated with said listed layer pairs.
- 18. The program storage device of claim 16, wherein said selecting the best estimate comprises calculating the median of said offsets associated with said listed layer pairs.